

WHAT IS CLAIMED IS:

1. An authentication apparatus collecting a distributed electronic document with an electronic signature for authenticating said electronic document comprising:

an electronic signature generating portion using personal information obtained by digitizing information associated with a physical feature of an individual to perform a first operation on first information for generating an encrypted electronic signature and adding said encrypted electronic signature to said electronic document; and

an individual authenticating portion extracting said encrypted electronic signature added to said electronic document and performing a second operation to decrypt said encrypted electronic signature for authentication of personal identification.

2. The authentication apparatus according to claim 1, wherein said electronic signature generating portion includes

a personal bit information generating portion encrypting personal information of said individual to generate personal bit information;

a logic operation portion using the personal bit information generated by said personal bit information generating portion to perform a logic operation on said first information for encryption; and

an electronic signature adding portion adding the information encrypted by said logic operation portion as said encrypted electronic signature to said electronic document.

3. The authentication apparatus according to claim 2, wherein said individual authenticating portion includes

an extracting portion extracting said encrypted electronic signature added to said electronic document;

a logic inverse operation portion performing a logic inverse operation on said encrypted electronic signature extracted by said extracting portion using the personal bit information generated by said personal bit

information generating portion for generating second information; and  
a comparing portion comparing said first information with said  
10 second information generated by said logic inverse operation portion for  
authentication of personal identification.

4. An authentication apparatus for authenticating personal  
identification at a time of payment with a card comprising:

an identification information generating portion performing a logic  
operation on first information using personal information of an individual  
5 for generating encrypted identification information; and

an authenticating portion comparing identification information pre-  
recorded in said card with the encrypted identification information  
generated by said identification information generating portion for  
authentication of personal identification.

5. The authentication apparatus according to claim 4, wherein said  
identification information generating portion includes

personal bit information generating portion encrypting personal  
information of said individual for generating personal bit information; and

5 a logic operation portion performing a logic operation on said first  
information using the personal bit information generated by said personal  
bit information generating portion for generating said identification  
information.

6. The authentication apparatus according to claim 5, wherein said  
authentication apparatus further includes

a logic inverse operation portion performing a logic inverse operation  
using the personal bit information generated by said personal bit  
5 information generating portion on an identification information pre-  
recorded in said card for generating second information; and

a comparing portion comparing said first information with the  
second information generated by said logic inverse operation portion for  
authentication of personal identification.

7. The authentication apparatus according to claim 4, wherein said personal information is obtained by digitizing information associated with a physical feature of the individual.

8. A verification apparatus for verifying an individual by a handwritten signature at a time of card payment comprising:

a logic operation portion performing a logic operation on identification information recorded in said card using a cipher key for generating first sign information; and

an identity determining portion comparing first sign information generated by said logic operation portion with second sign information obtained by digitizing the handwritten signature for determining identity of the individual.

9. The verification apparatus according to claim 8, wherein said identification information is obtained by performing a logic operation on first information using personal bit information generated by encryption of personal information of the individual.

10. The verification apparatus according to claim 8, wherein said personal information is obtained by digitizing information associated with a physical feature of the individual.

11. An electronic authentication system including a verification apparatus for verifying an individual by a handwritten signature at a time of card payment and an authentication apparatus for determining validity of payment which are interconnected,

said authentication apparatus including

a personal bit information generating portion encrypting personal information of an individual for generating personal bit information;

a first logic operation portion performing a logic operation on first information using the personal bit information generated by said personal bit information generating portion for generating first identification

information;

15 a cipher key generating portion performing a logic operation using the first identification information generated by said first logic operation portion on first sign information obtained by digitizing a handwritten signature for generating a cipher key;

a private identification number extracting portion extracting a private identification number from information transmitted from said verification apparatus;

20 a logic inverse operation portion performing a logic inverse operation using the personal bit information generated by said personal bit information generating portion on the private identification number extracted by said private identification number extracting portion for generating second information; and

25 a comparing portion comparing said first information with second information generated by said logic inverse operation portion for determining validity of payment,

said verification apparatus including

30 a second logic operation portion performing a logic operation using the cipher key generated by said cipher key generating portion on second identification information recorded in said card for generating second sign information; and

35 an identity determining portion comparing the second sign information generated by said second logic operation portion with third sign information obtained by digitizing a handwritten signature for determining identity of the individual.

12. The electronic authentication system according to claim 11, wherein said second identification information is obtained by performing a logic operation on the first information using personal bit information generated by encrypting personal information of the individual.

13. The electronic authentication system according to claim 11, wherein said personal information is obtained by digitizing information

associated with a physical feature of the individual.

14. An authentication apparatus for authenticating personal identification when a payment request is made from an external portion, comprising:

5 a private identification number generating portion performing a logic inverse operation using a first number changing over time on personal information of an individual for generating an encrypted private identification number; and

10 determining portion performing a logic operation on the externally received information using the private identification number generated by said private identification number generating portion for determining identity of the individual based on said logic operation result.

15. The authentication apparatus according to claim 14, wherein said determining portion includes

5 a logic operation portion externally receiving a random private identification number generated by performing a logic inverse operation on sign data predetermined by the individual using personal information of the individual for performing a logic operation on said random private identification number using the private identification number generated by said private identification number generating portion;

10 a number inverse operation portion externally receiving sign data and a second number changing over time for performing a logic inverse operation on said sign data using said second number; and

15 an identification determining portion comparing the logic operation result from said logic operation portion with the logic inverse operation result from said number inverse operation portion for determining identity of the individual.

16. The authentication apparatus according to claim 15, further comprising:

a logic inverse operation portion performing a logic inverse operation

5 on said personal information using the encrypted private identification number generated by said private identification number generating portion for generating a third number changing over time; and

a comparing portion comparing said second number with said third number generated by said logic inverse operation portion for authentication of personal identification.

17. The authentication apparatus according to claim 14, wherein said personal information is obtained by digitizing information associated with a physical feature of the individual.